

Notice of Allowability	Application No.	Applicant(s)	
	10/718,008	ZHONG DONG	
	Examiner	Art Unit	
	Thanh Y. Tran	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/26/06.
2. ☒ The allowed claim(s) is/are 1,2,4-15,26-29 and 31-34.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____ |
|---|--|

DETAILED ACTION

The restriction requirement filed on 9/21/06 is hereby withdrawn. Claims 26 and 31-34 are hereby rejoined and fully examined for patentability.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Gideon Gimlan on 2/2/07.

3. The application has been amended as follows:
Claims 22-25 and 30 have been canceled.

In claim 26, "The insulation forming method of Claim 25 wherein: (b.1) said providing of ... said essentially undoped semiconductor layer." has been changed to: --A method of forming insulation comprising:

(a) defining an oxidation stop layer in a top portion of a first conductively-doped semiconductor layer;

(b) providing an essentially undoped semiconductor layer on the first conductively-doped semiconductor layer and above the first oxidation stop layer;

(c) oxidizing the essentially undoped semiconductor layer so as to thereby create a corresponding, essentially undoped and thermally-grown, first oxide sublayer over the first conductively-doped semiconductor layer; and

(d) disposing a second conductively-doped semiconductor layer above the first oxide sublayer so that the first oxide sublayer provides electrical insulation between the first and second conductively-doped semiconductor layers; wherein:

(a.1) said defining of the oxidation stop layer includes defining an adhesion surface on the top portion of a first conductively-doped semiconductor layer for adhering to the essentially undoped semiconductor layer; and wherein:

(b.1) said providing of the essentially undoped semiconductor layer includes chemisorbing a first reactant monolayer to the adhesion surface on the top portion of a first conductively-doped semiconductor layer, where the first reactant monolayer can react with a subsequently provided, second reactant to form a base monolayer of said essentially undoped semiconductor layer.--

In claim 31, "The providing method of Claim 30 wherein: (b.1) said adhering includes ... the first conductively-doped semiconductor layer." has been changed to: -- A method of providing a high quality silicon dioxide layer atop a first conductively-doped semiconductor layer, the method comprising:

(a) introducing nitrogen into the first conductively-doped semiconductor layer through a top portion of the first conductively-doped semiconductor layer;

(b) adhering an essentially undoped silicon layer to the top portion of the first conductively-doped semiconductor layer;

(c) thermally oxidizing the adhered and essentially undoped silicon layer at least until a corresponding oxidation front of said thermal oxidizing step reaches the nitrogen introduced into the first conductively-doped semiconductor layer; and

(d) continuing said thermal oxidizing step beyond when the corresponding oxidation front reaches the introduced nitrogen; and wherein said adhering includes using of atomic layer deposition (ALD) to adhere a predefined number of monolayers of essentially undoped silicon to the top portion of the first conductively-doped semiconductor layer.--.

Allowable Subject Matter

4. Claims 1-2, 4-15, 26-29, and 31-34 are allowed.

5. The following is an examiner's statement of reasons for allowance:

The prior art of record and to the examiner's knowledge does not teach or render obvious, at least to the skilled artisan, the instant invention regarding:

An isolation providing method comprising the steps of: defining a first oxidation stop layer at a top surface portion of a first conductively-doped semiconductor layer; using atomic layer deposition (ALD) to adhere a first intrinsic silicon layer onto the first oxidation stop layer; and thermally oxidizing at least a sublayer portion of the first intrinsic silicon layer so as to thereby create a corresponding and thermally-grown, first intrinsic silicon oxide sublayer over the first semiconductor layer, as recited in claim 1. Claims 2, 4-15, and 27-29 are dependent upon independent claim 1.

A method of forming insulation comprising: defining an oxidation stop layer in a top portion of a first conductively-doped semiconductor layer; providing an essentially undoped semiconductor layer on the first conductively-doped semiconductor layer and above the first oxidation stop layer; oxidizing the essentially undoped semiconductor layer so as to thereby create a corresponding, essentially undoped and thermally-grown, first oxide sublayer over the

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first conductively-doped semiconductor layer; said defining of the oxidation stop layer includes defining an adhesion surface on the top portion of a first conductively-doped semiconductor layer for adhering to the essentially undoped semiconductor layer; and wherein: said providing of the essentially undoped semiconductor layer includes chemisorbing a first reactant monolayer to the adhesion surface on the top portion of a first conductively-doped semiconductor layer, where the first reactant monolayer can react with a subsequently provided, second reactant to form a base monolayer of said essentially undoped semiconductor layer, as recited in independent claim 26.

A method of providing a high quality silicon dioxide layer atop a first conductively-doped semiconductor layer, the method comprising: introducing nitrogen into the first conductively-doped semiconductor layer through a top portion of the first conductively-doped semiconductor layer; adhering an essentially undoped silicon layer to the top portion of the first conductively-doped semiconductor layer; thermally oxidizing the adhered and essentially undoped silicon layer at least until a corresponding oxidation front of said thermal oxidizing step reaches the nitrogen introduced into the first conductively-doped semiconductor layer; and wherein said adhering includes using of atomic layer deposition (ALD) to adhere a predefined number of monolayers of essentially undoped silicon to the top portion of the first conductively-doped semiconductor layer, as recited in independent claim 31. Claims 32-34 are dependent upon independent claim 31.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Y. Tran whose telephone number is (571) 272-2110. The examiner can normally be reached on M-F (9-6:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TYT


Zandra V. Smith
Supervisory Patent Examiner
5 Feb. 2007